



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,760	07/19/2005	Marc Rene Budinger	0501-1124	1129
466 7590 06/25/2009 YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314			EXAMINER GORDON, BRYAN P	
			ART UNIT 2837	PAPER NUMBER
			MAIL DATE 06/25/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/525,760

**Applicant(s)**

BUDINGER ET AL.

**Examiner**

BRYAN P. GORDON

**Art Unit**

2837

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Specification***

1. The amendments to the specification submitted on 17 April 2009 are accepted by the examiner and are ok to enter.

***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4-17-09 has been entered.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 17 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the single phase electric excitation connected to both electroactive components (piezoelectric elements). The applicant argues that the single-phase excitation excites the two bending modes at

such a frequency that the two modes have a phase shift between them. However the applicant claims the single phase electric excitation for at **least one of electro-active component**. The applicant also states that each electro-active component is used to excite one of the bending modes. How can the applicant claim that the single phase is connected to at least one electro-active component when in order for the device to work as claimed it has to be connected to both electric-active components? Appropriate correction is required.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 17 and 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The examiner is not sure what is meant by a single phase electric excitation for the at least one electro-active component, said single phase electric excitation at a frequency for which there is temporal phase difference between the two bending modes. The examiner is unclear how the claimed limitations are related to the structure of the device. If there is a single phase electrical excitation then how can the single phase have a temporal phase difference between the two bending modes (meaning there are two phases)? Isn't there only one phase?

8. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicant does not disclose a common phase electrode nor does it disclose two neutral electrodes.

9. Claim 28 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicant does not disclose a common phase electrode as claimed.

10. Claim 38 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The examiner does not see how the temporal phase difference of 90 degrees can be equal to the half-sum of the two resonance frequencies. Further explanation is requested.

#### ***Claim Objections***

11. Claims 30 and 38 are objected too. The applicant claims the phase excitation is substantially equal to the half-sum of said two different resonance frequencies. From

the applicants Figure 5 the frequency of the single phase excitation is not half-sum of the two different resonance frequencies. From the graphs it appears the resonance of F2 is 3.9 while F1 is 3.4 and the Fu is 3. Adding together F2 and F1 and dividing by two gives you a frequency of 3.65. That is not substantially equal to the Fu frequency that the applicant displays. Correction is required.

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 17-24, 26-27 and 29-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukimoto (EP 0 538 791) and in view of Honda (EP 0299415)

16. Considering claim 17, Tsukimoto (Figures 7A + 7B) teaches a rotation piezoelectric motor of the mode rotation type comprising a bendable stator fixed to a frame, wherein said stator exhibits two different resonance (col. 1 lines 5-10) frequencies in two respective bending modes ( $r_1$ ,  $r_2$ ) corresponding to two different directions of bending transversely to said centerline.

In the same field, Honda (Figure 7) teaches at least one electro-active component (20) mounted for imparting vibration to said stator and exciting said two bending modes of the stator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine an electro-active component of Honda in the device of Tsukimoto to operate or bending the ultrasonic motors since they are well known to vibrate.

17. Considering claim 18, Honda teaches at least one electroactive components is piezoelectric ceramics (col. 5 lines 30-34).

18. Considering claim 19, Tsukimoto teaches the two different bending modes (abstract) are obtained by means of a dissymmetrical fixing of the stator to the frame (since the stator bends in  $r_1$  and  $r_2$  direction, see Figure 6, there will be a dissymmetrical means in the stator).

19. Considering claim 20, Tsukimoto teaches the two different bending modes are obtained by use of anisotropic materials for the stator (col. 3 lines 1-5).
20. Considering claim 21, Tsukimoto teaches wherein the two different bending modes are obtained by means of a dissymmetrical shape of the stator (since the stator bends in r1 and r2 direction, see Figure 6, there will be a dissymmetrical means in the stator).
21. Considering claim 22, Honda in view of Tsukimoto teaches wherein the dissymmetrical shape of the stator comprises a dissymmetrical shape of at least one counterweight (18) being part of the stator.
22. Considering claim 23, Tsukimoto (Figure 10b) teaches wherein the dissymmetrical shape of the counterweight is obtained by recesses (22) on either side of the centerline.
23. Considering claim 24, Honda (Figure 7) teaches at least one electro-active component (20) comprises two electro-active components and each electro-active component is oriented about the centerline so as to excite a respective one of the bending modes of the stator.
24. Considering claim 26, Honda teaches wherein said at least one electro-active component is at least one piezoelectric wafer having two sectors arranged on either side of a plane containing the centerline, the two sectors having mutually opposed polarities parallel to the centerline (col. 4 lines 9-13).
25. Considering claim 27, Honda (Figure 7) teaches wherein said at least one electro-active component (20) is adapted and arranged for transmitting vibratory



excitation in a bending direction which is intermediate between said two directions of bending corresponding to said two bending modes, respectively (col. 6 lines 18-25).

26. Considering claim 29, Tsukimoto (Figure 5B) teaches wherein said frequency of the single phase excitation is intermediate between said two different resonance frequencies ( $A + B$ ).

27. Considering claim 30, Tsukimoto teaches wherein said frequency of the single phase excitation is substantially equal to the half-sum of said two different resonance frequencies (see Figure 5B).

28. Considering claim 31, Tsukimoto teaches the angle between the two different directions of bending resonance and the temporal phase difference between the two bending modes at the selected frequency of the single phase electric excitation are substantially equal (col. 1 lines 37-45).

29. Considering claim 32, Tsukimoto teaches wherein the two directions of bending are at 90 degrees of each other and the phase difference is 90 degrees (col. 1 lines 44-48).

30. Considering claim 33, Honda (Figure 7) teaches the stator comprises two counterweights (18, 19) mounted on either side of said at least one electro-active components (20).

31. Considering claim 34, Honda teaches that the two counterweights are identical (col. 7 lines 9-11).

32. Considering claim 35, Honda in view of Tsukimoto teaches a method of generating a progressive wave traveling around a centerline along an end face of a

bendable stator (col. 1 lines 1-5 having two bending modes (col. 6 lines 20-27) with two corresponding different resonance frequencies (see Figure 5B of Tsukimoto) in two different directions transverse to the centerline.

33. Considering claim 36, Tsukimoto teaches the frequency of the single phase excitation is selected for giving said temporal phase difference a value equal to an angle between the two directions of the bending mode (col. 1 lines 35-45).

34. Considering claim 37, Tsukimoto teaches wherein the angle is 90 degrees (col. 1 lines 40-42).

#### ***Response to Arguments***

35. Applicant's arguments with respect to claim 17 have been considered but are moot in view of the new ground(s) of rejection. Regarding the argument that Honda does not discuss two bending modes having two different resonance frequencies the argument is moot since the Tsukimoto is now used to rejection that limitation. Regarding the single phase at a frequency for which both bending Modes would exhibit a temporal phase shift between them a 112 rejection has been made as the applicant will note at the beginning of this office action. Therefore, that argument is moot.

#### ***Conclusion***

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN P. GORDON whose telephone number is (571)272-5394. The examiner can normally be reached on Monday-Thursday 8:00-5:30, Friday 7:30-4:00.

37. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Benson can be reached on 571-272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

38. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bryan P Gordon/  
Examiner, Art Unit 2834

/Walter Benson/  
Supervisory Patent Examiner, Art Unit 2837